

What is Claimed is:

1. A magnetic field sensor comprising:

a Hall element for outputting a signal in accordance with an applied magnetic field strength to an output terminal;

a switch circuit for inputting the signal of said output terminal of said Hall element and for outputting a signal selected by a signal comprising first and second phases given from the outside of said switch circuit;

an amplifier wherein at least one input terminal is connected to the output terminal of said switch circuit and a voltage gained by amplifying the signal of this input terminal is outputted to an output terminal;

a first memory element of which one end is connected to said output terminal of said amplifier;

a switch of which one end is connected to the other end of said first memory element and which carries out opening and closing operations by means of said signal which comprises the first and the second phases given from the outside of said switch; and

a signal output terminal connected to said other terminal of said first memory element,

wherein said switch closes in said first phase so that said first memory element stores an output voltage of said amplifier and said switch opens in said second phase so that a vector sum of said voltage stored in said first memory element

then an output voltage of said amplifier is outputted to said output terminal.

2. A magnetic field sensor according to Claim 1, characterized in that:

    said switch circuit comprises second and third memory elements; and

    in said first phase of said signal given from the outside of said switch circuit, the output voltage of the output terminal of said Hall element is stored in said second memory element and the voltage stored in said third memory element is given to said amplifier and,

    in said second phase, the voltage stored in said second memory element is given to said amplifier and the voltage of the output terminal of said Hall element is stored in said third memory element.

3. A magnetic field sensor according to Claim 1 or 2, characterized in that at least one memory element among said memory elements is a capacitor.

4. A magnetic field sensor according to Claim 1 or 2, characterized in that:

    said switch comprises first, second and third parallel connections wherein first and second conductive characteristics transistors are connected in parallel, and the connection between two terminals of said first and second conductive characteristics transistors are conducted or cut off

by a binary signal given from the outside of said switch,

wherein both ends of the second parallel connection are connected to one end of the first parallel connection; and both ends of the third parallel connection are connected to the other end of the first parallel connection; and the first conductive characteristics transistor in the first parallel connection is driven by a different value of the binary signal from a value of the binary signal for driving the first conductive transistors in the second and third parallel connections; and the second conductive characteristics transistor in the first parallel connection is driven by a different value of the binary signal from a value of the binary signal for driving the second conductive transistors in the second and third parallel connections.

5. A magnetic field sensor according to Claim 1 or 2, characterized in that at least one of the resistances for defining the gain of the amplifier is an element of which the manufacturing process is identical to that of the Hall element.

6. A magnetic field sensor characterized by comprising:

a Hall element which outputs a signal in accordance with an applied magnetic field strength;

an amplifier which amplifies the output signal of this Hall element and outputs a voltage signal across a pair of output terminals;

a condenser of which both ends are connected to the pair

of the output terminals of said amplifier;

a switch part which is inserted and makes a connection between one of said output terminals in the pair and one terminal of said condenser and which is closed by a first signal given from the outside of said switch part and is opened by a second signal given from the outside of said switch part; and

an output terminal which outputs the voltages of both ends of said switch, respectively,

wherein the polarities of the voltage signals for the pair of the output terminals of said amplifier during the period of said first signal and during the period of said second signal are mutually opposite polarities.

7. A magnetic field sensor characterized by comprising:

a Hall element which outputs signals to first and second terminal pairs in accordance with an applied magnetic field strength;

first and second condensers;

a first connection part which connects terminals of said first terminal pair and both ends of said first condenser, respectively;

a second connection part which connects terminals of said second terminal pair and both ends of said second condenser, respectively;

a first switch part which is inserted and makes a connection in said first connection part and which closes this

first connection part by means of a first signal given from the outside of said first switch part and opens this first connection part by means of a second signal given from the outside of said first switch part;

a second switch part which is inserted and makes a connection in said second connection part and which opens this second connection part by means of said first signal given from the outside of said second switch part and closes this second connection part by means of said second signal given from the outside of said second switch part;

an amplifier which amplifies a signal given to an input terminal so as to output to an output terminal;

a first output terminal;

a third connection part which connects both ends of said first condenser to the input terminal of said amplifier as well as to said first output terminal, respectively;

a fourth connection part which connects both ends of said second condenser to the input terminal of said amplifier as well as to said first output terminal, respectively;

a third switch part which is inserted and makes a connection in said third connection part and which opens this third connection part by means of said first signal given from the outside of said third switch part and closes this third connection part by means of said second signal given from the outside of said third switch part;

a fourth switch part which is inserted and makes a connection in said fourth connection part and which closes this fourth connection part by means of said first signal given from the outside of said fourth switch part and opens this fourth connection part by means of said second signal given from the outside of said fourth switch part;

a second output terminal;

a third condenser of which one end is connected to the output terminal of said amplifier and of which the other end is connected to said second output terminal; and

a fifth switch part of which both ends are connected respectively to said first and second output terminals and which is closed by said first signal given from the outside of said fifth switch part and is opened by said second signal given from the outside of said fifth switch part;

wherein a signal is extracted across said first and second output terminals.

8. A magnetic field sensor according to Claim 7, characterized by comprising:

a comparator that converts the results of the comparison of the differential signal of said input signals which enter from said first output terminal and said second output terminal respectively with a predetermined voltage into binary signals so as to output; and

a latch circuit which inputs the output signal of said

comparator and said second signal, and outputs either value of said binary signal, synchronized with one phase of said second signal.

9. A magnetic field sensor characterized by comprising:

    a Hall element which outputs a signal in accordance with an applied magnetic field strength;

    an amplifier which amplifies the output signal of this Hall element and outputs a voltage signal to an output terminal pair;

    a condenser of which respective terminals are connected to the terminals of the output terminal pair of said amplifier;

    a switch which is inserted to make a connection with one terminal of said output terminal pair and one terminal of said condenser and which is closed by a first signal given from the outside of said switch and is opened by a second signal given from the outside of said switch;

    output terminals which output voltages of both ends of said switch respectively;

    a comparator which inputs signals of these output terminals respectively and converts the results of the comparison of the differential signal of said input signals with a predetermined voltage into a binary signal so as to output; and

    a latch circuit which inputs said binary signal and said second signal, and outputs either value of said binary signal.

synchro nized with one phase of said second signal,

wherein the polarities of the voltage signals of the output terminal pair of said amplifier between the period of said first signal and the period of said second signal are of mutually opposite polarities.

10. A magnetic field sensor according to Claim 8 or 9, characterized in that said predetermined voltage of said comparator varies depending on the output signal of said latch circuit.

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